Remarks/Arguments

Examiner Timothy J. Henn is thanked for the continued thorough Search and Examination of the Subject Application for Patent.

Claims 1, 26, 35, and 39 have been amended to add the limitation that the 2x2 pixel block from two adjacent columns and two adjacent rows of the array read simultaneously need not be a Bayer matrix. The basis for this amendment to Claims 1, 26, 35, and 39 can be found in the Specification from page 7, line 30 to page 8, line 3.

In the Response to Arguments section of this Office Action the Examiner argues that any part of the arguments in the Response to the Office Action of July 5, 2007; filed October 9, 2007; based on the 2x2 pixel block not needing to be a Bayer matrix were moot since this limitation was not in the claims as written. While we respectfully disagree, since it is believed that if the limitation that the 2x2 pixel block is a Bayer matrix is not in the claims the 2x2 pixel block need not be a Bayer matrix, Claims 1, 26, 35, and 39 have been amended to add the limitation that the 2x2 pixel block from two adjacent columns and two adjacent rows of the array read simultaneously need not be a Bayer matrix. These amendments are made at this time in response to the Examiner's arguments to avoid any question of the 2x2 pixel block not needing to be a Bayer matrix being moot. The arguments are also made at this time to place the Claims in better position for Appeal.

Reconsideration of the Rejection of Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US 4,768,085) in view of Ogawa et al. (US 7,142,,233) in view of Roberts (US 5,541,654) is requested. Claim 21 has been cancelled. Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 describe a color imaging system for compensating a color response. Key elements of Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 are "an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array." Hashimoto describes an image sensing apparatus which has the ability to read adjacent horizontal lines sequentially and simultaneously; column 3, lines 59-65. Ogawa et al. describe an image pickup element including a plurality of photo detectors each having a color filter array, a vertical direction selection circuit, a horizontal direction selection circuit, and an output circuit. Roberts describes an imaging device which includes the ability to scan the pixels in windows of the array, or sub-arrays, more frequently than the pixels in the rest of the array; column 10, lines 9-21. It is believed that Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 are significantly different from and not obvious from Hashimoto in view of Ogawa et al. in view of Roberts because Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 describe a color imaging system which

simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array.

Hashimoto describes an imaging system which simultaneously reads out two adjacent horizontal lines to form an odd field and two horizontal lines to form an even field. If in forming the odd field lines n and n+1 are simultaneously read lines n+1 and n+2 are simultaneously read to form the even field; Fig. 1 and column 3, line 53 - column 4, line 1. Hashimoto describes streaming data which is to be used to form a high quality frame image. While the two adjacent lines described by Hashimoto would contain a number of 2x2 blocks of pixels a particular 2x2 block pixels from two adjacent rows and two adjacent columns could not be selected without further signal processing which is not described by Hashimoto.

As indicated by the Examiner Ogawa et al. state in column 3, lines 57-59, with reference to Fig. 4, "Original pixels are read from the image pickup element **101** in units of 2x2 basic (minimum) blocks of a Bayer matrix." The Examiner has argued that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform readouts in units of blocks as taught by Ogawa in the image sensor of Hashimoto". We respectfully disagree because the description of Ogawa et al. requires a 2x2 Bayer matrix. Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 do not describe nor require a Bayer matrix of pixels.

Roberts describes an imaging device which includes the ability to scan the pixels in windows of the array, or sub-arrays, more frequently than the pixels in the rest of the array, column 10, lines 9-21. However the scanning of windows or sub-arrays described by Roberts is different from the simultaneous reading of a particular 2x2 block of two adjacent rows and two adjacent columns from an array described in Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40. It is believed that Roberts does not make the simultaneous reading of a particular 2x2 block of two adjacent rows and two adjacent columns from an array; as described in Claims 1, 3, 4, 6, 12-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40; an obvious extension of Hashimoto in view of Ogawa et al.

It is believed that an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array makes Claims 1, 3, 4, 6, 12-22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 distinct from and not obvious from Hashimoto in view of Ogawa et al. in view of Roberts.

It is believed that an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and

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wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array makes Claims 1, 3, 4, 6, 12, 13-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 distinct from and not obvious from Hashimoto in view of Ogawa et al. in view of Roberts. Reconsideration of the Rejection of Claims 1, 3, 4, 6, 12, 13-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40 under 35 U.S.C. 103(a) as being unpatentable over Hashimoto in view of Ogawa et al. in view of Roberts; and allowance of Claims 1, 3, 4, 6, 12, 13-20, 22, 26, 28, 29, 31, 33, 35, 36, 39, and 40; are requested. Claim 21 has been cancelled.

Reconsideration of the Rejection of Claims 7, 8, 30 and 32 under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US 4,768,085) in view of Ogawa et al. (US 7,142,233) in view of Roberts (US 5,541,654) as applied to Claim 1, and further in view of Boisvert et al. (US 5,329,312) is requested. Key elements of Claims 7, 8, 30, and 32 are "an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array." Claim 7 adds the limitation to Claim 1 that the analog compensation units are programmable gain amplifiers. Claim 8 adds the limitation to Claim 7 that the analog compensation units are programmable gain amplifiers implemented as a separate stage. Claim 30 adds the limitation to Claim 26 that generating a compensated analog readout depends on a

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temperature of the system. Claim 32 adds the limitation to Claim 26 that the pixel sensor elements are associated with the colors of red, blue and green and that the array of pixel sensor elements is arranged in a plurality of rows and columns and the act of generating comprises:

generating an independent readout for even-numbered rows;

generating an independent readout for odd-numbered rows;

generating an independent readout for even-numbered columns; and

generating an independent readout for odd-numbered columns, such that at least one element associated with a red filter component is coupled to a first programmable gain amplifier, at least one element associated with a blue filter component is coupled to a second programmable gain amplifier, and at least one element associated with a green filter component is coupled to a third programmable gain amplifier.

As indicated by the Examiner Boisvert et al. describe an improved signal processing system which provides white balancing with minimal dark level differences using separate programmable gain amplifiers for each pixel color which are temperature compensated. It is believed that Claims 7, 8, 30 and 32 are different from and not obvious from Hashimoto in view of Ogawa et al. in view of Roberts for the reasons given above in the response to the rejection of Claim 1. It is further believed that Boisvert et al. do not make the simultaneous reading of a particular 2x2 block, which need not be a Bayer matrix, of two adjacent rows and two adjacent columns from an array; as is described in Claims 7, 8, 30 and 32; an obvious extension of Hashimoto in view of Ogawa et al. in view of Roberts.

It is believed that an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array makes Claims 7, 8, 30 and 32 distinct from and not obvious from Hashimoto in view of Ogawa et al. in view of Roberts, and further in view of Boisvert et al. Reconsideration of the Rejection of Claims 7, 8, 30 and 32 under 35 U.S.C. 103(a) as being unpatentable over Hashimoto in view of Ogawa et al.in view of Roberts, and further in view of Boisvert et al.; and allowance of Claims 7, 8, 30 and 32; are requested.

Reconsideration of the Rejection of Claims 9 and 10 under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US 4,768,085) in view of Ogawa et al. (US 7,142,233) in view of Roberts (US 5,541,654) in view of Boisvert et al. (US 5,329,312) as applied to Claim 7 and further in view of Zhou et al. (IEEE) is requested. Key elements of Claims 9 and 10 are "an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array."

Claim 9 adds the limitation to Claim 1 that the analog compensation units are programmable gain amplifiers and that the programmable gain amplifiers are contained within a pixel circuitry of the array. Claim 10 adds the limitation to Claim 1 that the analog compensation units are programmable gain amplifiers and that the programmable gain amplifiers are within a plurality of column buffers.

It is believed that Claims 9 and 10 are different from and not obvious from Hashimoto in view of Ogawa et al. in view of Roberts in view of Boisvert et al. for the reasons given above in the response to the rejection of Claims1 and 7. As indicated by the Examiner, with reference to Zhou et al., programmable gain amplifiers contained within the pixel circuitry and within a plurality of column buffers is known. It is believed, however, that Zhou et al. do not make the simultaneous reading of a particular 2x2 block, which need not be a Bayer matrix, of two adjacent rows and two adjacent columns from an array, as is described in Claims 9 and 10, an obvious extension of Hashimoto in view of Ogawa et al. in view of Roberts in view of Boisvert et al.

It is believed that an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array makes Claims 9 and 10 distinct from and not obvious from Hashimoto in view of Ogawa et al. in

view of Roberts in view of Boisvert et al., and further in view of Zhou et al.

Reconsideration of the Rejection of Claims 9 and 10 under 35 U.S.C. 103(a) as being

unpatentable over by Hashimoto in view of Roberts, and further in view of Zhou et al.;

and allowance of Claims 9 and 10; are requested.

Reconsideration of the Rejection of Claim 23 under 35 U.S.C. 103(a) as

being anticipated by Hashimoto (US 4,768,085) in view of Ogawa et al. (US 7,142,233)

in view of Roberts (US 5,541,654) as applied to Claim 1, and further in view of Sano et

al. (IEEE) is requested. Key elements of Claim 23 are "an array controller adapted to

control the readout of the elements associated with the first, second and third color

components wherein said array controller directs said readout of said first, second, and

third color filter components in a selected window of said array while other sections of

said array are not processed and wherein said array controller simultaneously reads a 2x2

pixel block, , which need not be a Bayer matrix, from two adjacent columns and two

adjacent rows of said array." Claim 23 adds the limitation to Claim 1 that the system

further comprises a micro-lenses layer.

It is believed that Claim 23 is different from and not obvious from

Hashimoto in view of Ogawa et al. in view of Roberts for the reasons given above in the

response to the rejection of Claim 1. As indicated by the Examiner, with reference to

Sano et al., the use of a micro-lenses layer is known. It is believed, however, that Sano et

al. do not make the simultaneous reading of a particular 2x2 block, which need not be a

Bayer matrix, of two adjacent rows and two adjacent columns from an array; as is

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described in Claim 23; an obvious extension of Hashimoto in view of Ogawa et al. in view of Roberts.

It is believed that an array controller adapted to control the readout of the elements associated with the first, second and third color components wherein said array controller directs said readout of said first, second, and third color filter components in a selected window of said array while other sections of said array are not processed and wherein said array controller simultaneously reads a 2x2 pixel block, which need not be a Bayer matrix, from two adjacent columns and two adjacent rows of said array makes Claim 23 distinct from and not obvious from Hashimoto in view of Ogawa et al. in view of Roberts, and further in view of Sano et al. Reconsideration of the Rejection of Claim 23 under 35 U.S.C. 103(a) as being unpatentable over Hashimoto in view of Ogawa et al. in view of Roberts, and further in view of Sano et al.; and allowance of Claim 23; are requested.

In summary it is believed that Claims 1, 3-4, 6-10, 12-20, 22-23, 26, 28-33, 35-36, and 39-40 distinguish patentably from the references and allowance of Claims 1, 3-4, 6-10, 12-20, 22-23, 26, 28-33, 35-36, and 39-40 is requested.

It is requested that should Examiner T. J. Henn not find that the Claims are now Allowable that the Examiner call the undersigned Attorney at (845)-452-5863 to overcome any problems preventing allowance.

Respectfully submitted,

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